

# PATENT SPECIFICATION

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## COMPLETE SPECIFICATION

### Improvements in Dentifrice Products

We, THIBAUD GIBBS & CIE., of 22, rue de Marignan, Paris, France, a body corporate organised under the laws of France, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The invention relates to improvements in dentifrice products in paste form.

It has been observed that the phenomenon of polishing which takes place in the use of dentifrices with abrasives is not merely connected with the degree of hardness of the substances entering into action but rather with their structure and in particular with their crystalline state. Practice shows in fact that the majority of dentifrice products containing abrasive substances with microcrystalline structure such as marble powder, or precipitated calcium carbonate, produce striations on the enamel of the teeth although their degree of hardness is less than that of the enamel. Consequently instead of producing polishing of the teeth these abrasives produce in fact removal of their polish by wear either of the prisms of the enamel or of the interprismatic substance. It is suitable to remark that there is never wear of the two at the same time which explains the action of removal of the polish manifesting itself by the production of a granular surface. Teeth brought into this state have a quite particular susceptibility to caries, which susceptibility may be explained by the retention on the surface of the tooth which is become rugged of scraps of food, by the action of the acid resulting from the decomposition of these scraps, and by the deposit of tartar.

In order to obviate these serious disadvantages of the abrasives currently employed, it has already been proposed to employ as abrasives in dentifrices, materials such as silica in the form of colloidal gel, cellulose and its esters in the form of pulp and even paper in the form of paste. In fact these abrasives are too soft to accomplish the efficacious cleaning action which the teeth require.

[Price 1/-]

They act in fact on the surface of the teeth like a real washing cloth, nothing more, but they cannot after having removed the film exercise a real polishing action on the enamel.

The present invention has for its subject an improvement applied to the constitution of dentifrice products in paste form with the object of eliminating all these disadvantages and of permitting these products to have an efficacious polishing action leading to the production of a uniformly smooth surface while avoiding the excessive wear which is shown by the phenomenon known under the name of erosion or abrasion.

For this purpose, the invention aims at using as polishing bodies substances having not only a suitable degree of hardness—that is to say approximately equal to that of the cement, such as exists at the collar of the tooth—but a structure such that they wear more quickly than the surface of the teeth. The invention is based on the discovery that mica perfectly satisfies these conditions. Mica possesses in fact in the most abundant commercial varieties a hardness equal to that of the cement but due to its particular crystalline lamellar structure it wears away in contact with this substance instead of wearing it. In fact even when it is reduced to a state of fine powder, mica is in the form of particles which exercise on the teeth a polishing action and have flat surfaces the sharp angles of which are rounded from the beginning of the cleaning action. During the cleaning action, there is indeed wear but wear which takes place here to the detriment of the polishing substance used and no longer as in the case of the abrasives currently used to the detriment of the tooth.

In specification No. 16490/84 it has been proposed to manufacture a detergent by incorporating magnesia mica with soap material.

The dentifrice product according to the present invention is in paste form and comprises as abrasive constituent finely powdered mica in its natural crystalline lamellar form, in admixture with other

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ingredients of the kind employed in the manufacture of tooth pastes.

The mica is used in the form of fine powder obtained by pulverising and passing through sieves either mica in sheets or in scraps, and is subsequently incorporated in a paste which may be saponaceous or non-saponaceous.

Amongst the various micas which may be employed the following are the principal:—

The double silicate of aluminium and potassium (muscovite), the double silicate of aluminium and sodium (paragonite), the triple silicate of aluminium, potassium and lithium (lepidolite), the quadruple silicate of aluminium, potassium, iron and lithium (zinnwaldite), the quadruple silicate of aluminium, iron, magnesium and potassium (biotite), phlogopite or aluminium potassium and magnesium silicate combined with the double fluoride of potassium and magnesium, lepidomelane, of composition analogous to biotite but containing a large percentage of iron in the ferric form, roscoelite, analogous to muscovite but with about 30% of vanadium oxide.

The hardness of the different micas evaluated by means of MOH'S scale is as follows:—

Muscovite 2 to 2.5  
Paragonite 2.5 to 4  
Lepidolite 2.5 to 4  
Zinnwaldite 2.5 to 3.5  
Biotite 2.5 to 3  
Phlogopite 2.5 to 3

Micas will be preferably chosen whose hardness is between 2 and 3. This degree of hardness appears in fact the most convenient from the point of view of the dentifrice action. It is of interest to observe that the varieties of micas which are most easy to procure commercially fulfil well these specifications of hardness.

The invention can be carried into effect according to the non-limiting examples which follow, the parts being by weight.

#### EXAMPLE 1.

With 70 parts of a saponaceous paste made by emulsifying 5 parts of soap, 10 parts of glycerine, 54 parts of water, by means of 1 part of gum tragacanth there are incorporated 30 parts of finely ground mica.

#### EXAMPLE 2.

To 12 parts of a mucilage of gum tragacanth formed into paste, 8 parts of glycerine are added. In this base 22 parts of finely pulverised mica is incorporated. The consistency of the final

product depends upon that of the mucilage of gum tragacanth employed and the quantity of mica incorporated. There is thus obtained a non-lathering tooth paste.

#### EXAMPLE 3.

A solution of glycerine and gelatine is prepared with 7.5 parts of white gelatine, 120 parts of distilled water, 210 parts of glycerine. With 120 parts of this mixture there are incorporated 36 parts of finely powdered mica. If it is desired to render this paste lathering to the mass is added 7.5 parts of powdered soap.

In all the examples above the proportions may vary according to the end sought. Likewise other products such as antiseptics, bactericidal agents or astringents, may be added. The addition of perfume and colouring material is naturally permissible.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A dentifrice product in paste form comprising as abrasive constituent finely powdered mica in its natural crystalline lamellar form, and other ingredients of the kind employed in the manufacture of tooth paste.

2. A dentifrice product as claimed in claim 1, in the form of a saponaceous paste in which the abrasive is incorporated in the form of fine powder.

3. A dentifrice product as claimed in claim 2 comprising finely powdered mica, soap and glycerine.

4. A dentifrice product as claimed in claim 1, in the form of a non-saponaceous paste with a base of gum tragacanth, gelatine, or the like, in which the abrasive is incorporated in the form of fine powder.

5. A dentifrice product as claimed in any of the foregoing claims and containing also one or more of the following constituents:—Perfumes, colouring materials, astringents and antiseptics.

6. A dentifrice product substantially as described in the examples.

Dated the 20th day of June, 1934.

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Reference has been directed, in pursuance of Section 7, Sub-section (4), of the Patents and Designs Acts 1907 to 1932, to Specification No. 16490 of 1884.